Merck Animal Health
One Merck Dr.
Whitehouse Station, NJ 08889

MATERIAL SAFETY DATA SHEET

Merck urges each user or recipient of this MSDS to read the entire data sheet to become aware of the hazards associated with this material.

SECTION 1. IDENTIFICATION OF SUBSTANCE AND CONTACT INFORMATION

MSDS NAME: **Scalibor**

SYNONYM(S): Scalibor
Scalibor collier

MSDS NUMBER: SP002443

EMERGENCY NUMBER(S): (908) 423-6000 (24/7/365) English Only
Emergencies - CHEMTREC:
(800) 424-9300 (Inside Continental USA)
(703) 527-3887 (Outside Continental USA)

Rocky Mountain Poison Center (For Human Exposure):
(303) 595-4869

Animal Health Technical Services:
For Animal Adverse Events: Small Animals and Horses: (800) 224-5318
For Animal Adverse Events: Livestock: (800) 211-3573
For Animal Adverse Events: Poultry: (800) 219-9286

INFORMATION: Animal Health Technical Services:
For Small Animals and Horses: (800) 224-5318
For Livestock: (800) 211-3573
For Poultry: (800) 219-9286

MERCK MSDS HELPLINE: (800) 770-8878 (US and Canada)
(908) 473-3371 (Worldwide)
Monday to Friday, 9am to 5pm (US Eastern Time)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Solid
White
Faint odor
Harmful by inhalation.
Harmful if swallowed.
May be irritating to eyes, skin or respiratory tract.
May cause effects to:
central nervous system
gastrointestinal tract
respiratory system
Toxic to aquatic organisms.
May cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS:

SECTION 2. HAZARDS IDENTIFICATION

The toxicological properties of the mixture(s) have not been fully characterized in humans or animals. However, there are data to describe the toxicological properties of the individual ingredients. The following summary is based upon available information about the individual ingredients of the mixture(s), or of the expected properties of the mixture(s).

Deltamethrin, a type II pyrethroid insecticide, may cause skin, eye and respiratory irritation. Occupational exposure to deltamethrin has induced temporary skin and facial sensations (feelings of numbness and tingling) or dizziness. Oral ingestion may cause nausea and vomiting. Inhalation exposure to deltamethrin may cause stuffy or runny nose, scratchy throat, wheezing, sneezing, shortness of breath, bronchospasm, headache, dizziness, or feelings of numbness and tingling.

LISTED CARCINOGENS

INGREDIENT	CAS NUMBER	OSHA	IARC	NTP	ACGIH
Titanium Dioxide	13463-67-7		2B		

Deltamethrin is classified by IARC as a Group 3 carcinogen (unclassifiable as to carcinogenicity in humans).
2B (IARC): IARC Group 2B - Possibly Carcinogenic to Humans

SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

PRODUCT USE: Veterinary product

CHEMICAL FORMULA: Mixture.

The formulation for this product is proprietary information. Only hazardous ingredients in concentrations of 1% or greater and/or carcinogenic ingredients in concentrations of 0.1% or greater are listed in the Chemical Composition table. Active ingredients in any concentration are listed. For additional information about carcinogenic ingredients see Section 2.

CHEMICAL COMPOSITION

INGREDIENT	CAS NUMBER	PERCENT
Deltamethrin	52918-63-5	4
Triphenyl Phosphate	115-86-6	30-40
Titanium Dioxide	13463-67-7	1-2

ADDITIONAL INFORMATION: This MSDS is written to provide health and safety information for individuals who will be handling the final product formulation during research, manufacturing, and distribution. For health and safety information for individual ingredients used during manufacturing, refer to the appropriate MSDS for each ingredient. Refer to the package insert or product label for handling guidance for the consumer.

SECTION 4. FIRST AID MEASURES

INHALATION: Remove to fresh air. Administer artificial respiration if breathing has ceased. IMMEDIATELY consult a physician.

SKIN CONTACT: In case of skin contact, while wearing protective gloves, carefully remove any contaminated clothing, including shoes, and wash skin thoroughly with soap and water. If irritation or symptoms occur or persist, consult a physician.

EYE CONTACT: In case of eye contact, immediately rinse eyes thoroughly with plenty of water. If wearing contact lenses, remove only after initial rinse, and continue rinsing eyes for at least 15 minutes. If irritation occurs or persists, consult a physician.

INGESTION: Do not induce vomiting unless under the direction of a qualified medical professional or Poison Control Center. IMMEDIATELY consult a physician. Do not attempt to give anything by mouth to a seizing, drowsy or unconscious person. If alert, rinse mouth and drink a glass of water.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABILITY DATA:

Flash Point: Not determined (liquids) or not applicable (solids).

SECTION 5. FIRE FIGHTING MEASURES

EXPLOSION HAZARDS:
Under normal conditions of use, this material does not present a significant fire or explosion hazard. However, like most organic compounds, this material may present a dust deflagration hazard if sufficient quantities are suspended in air. This hazard may exist where sufficient quantities of finely divided material are (or may become) suspended in air during typical process operations. An assessment of each operation should be conducted and suitable deflagration prevention and protection techniques employed. The sensitivity of this material to ignition by electrostatic discharges has not been determined. In the absence of testing data, all conductive plant items and operations personnel handling this material should be suitably grounded.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing and self-contained breathing apparatus (SCBA).

SUITABLE EXTINGUISHING MEDIA:
Water, carbon dioxide (CO2), foam, or dry chemical.

See Section 9 for Physical and Chemical Properties.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Avoid generation of dust during clean-up. Wear appropriate personal protective equipment as specified in Section 8. Keep personnel away from the clean-up area.

SPILL RESPONSE / CLEANUP:
All spills should be handled according to site requirements and based on precautions cited in the MSDS. In the case of liquids, use proper absorbent materials. For laboratories and small-scale operations, incidental spills within a hood or enclosure should be cleaned by using a HEPA filtered vacuum or wet cleaning methods as appropriate. For large dry or liquid spills or those spills outside enclosure or hood, appropriate emergency response personnel should be notified. In manufacturing and large-scale operations, HEPA vacuuming prior to wet mopping or cleaning is required.

ENVIRONMENTAL PRECAUTIONS:
This product is harmful to aquatic organisms. Do not allow product to reach ground water, water course, sewage or drainage systems. Keep away from ignition sources.

See Sections 9 and 10 for additional physical, chemical, and hazard information.

SECTION 7. HANDLING AND STORAGE

HANDLING:
Keep containers adequately sealed during material transfer, transport, or when not in use. Wash face, hands, and any exposed skin after handling. Do not eat, drink, or smoke when using this substance or mixture.

Appropriate handling of this material is dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. See Section 8 (Exposure Controls) for additional guidance.

STORAGE:
Store in a cool, dry, well ventilated area. Store away from heat source. Avoid aqueous conditions such as moisture or water. Avoid storage near food.

See Section 8 for exposure controls and additional safe handling information.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

The following guidance applies to the handling of the active ingredient(s) in this formulation. The end-user should perform an appropriate risk assessment when handling other forms or formulations of this active ingredient.

OCCUPATIONAL EXPOSURE BAND (OEB):
Deltamethrin: OEB 3: >=10<100 mcg/m^3. Materials in an OEB 3 category are considered moderate health hazards. The OEB is a range of airborne concentrations expressed as an 8-hour Time Weighted Average (8-hr. TWA) and is intended to be used with Industrial Hygiene Risk Assessment to assist with industrial hygiene sampling and selection of proper controls for worker protection. Consult your site safety and industrial hygiene staff for guidance on handling and control strategies.

INTERNAL OCCUPATIONAL EXPOSURE LIMIT (8-hr TWA):
Deltamethrin: 10 mcg/m^3

Wipe Limit:
Deltamethrin: 150 mcg/100cm2

EXPOSURE CONTROLS
The health hazard risks of handling this material are dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. Exposure controls for normal operating or routine procedures follow a tiered strategy. Engineering controls are the preferred means of long-term or permanent exposure control. If engineering controls are not feasible, appropriate use of personal protective equipment (PPE) may be considered as alternative control measures. Exposure controls for non-routine operations must be evaluated and addressed as part of the site-specific risk assessment.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

Respiratory Protection:	Respiratory protective equipment (RPE) may be required for certain laboratory and large-scale manufacturing tasks if potential airborne breathing zone concentrations of substances exceed the relevant exposure limit(s). Workplace risk assessment should be completed before specifying and implementing RPE usage. Potential exposure points and pathways, task duration and frequency, potential employee contact with the substance, and the ability of the substance to be rendered airborne during specific tasks should be evaluated. Initial and ongoing strategies of quantitative exposure measurement should be obtained as required by the workplace risk assessment. All RPE must conform to local and regional specifications for efficacy and performance. Consult your site or corporate health and safety professional for additional guidance.
Skin Protection:	Gloves that provide an appropriate barrier to the skin are recommended if there is potential for contact with this material. Consult your site safety staff for guidance.
Eye Protection:	Safety glasses with side shields. Use of goggles or full face protection may be required based on hazard, potential for contact, or level of exposure. Consult your site safety staff for guidance.
Body Protection:	In small-scale or laboratory operations, lab coats or equivalent protection is required. Disposable Tyvek or other dust impermeable suit should be considered based on procedure or level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance. In large-scale or manufacturing operations, disposable Tyvek or other dust impermeable suit is recommended and based on level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

EXPOSURE LIMIT VALUES

INGREDIENT	CAS NUMBER	ACGIH TLV (TWA)	OSHA PEL (TWA)
Triphenyl Phosphate	115-86-6	3 mg/m^3	3 mg/m^3
Titanium Dioxide	13463-67-7	10 mg/m^3	15 mg/m^3

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Solid
COLOR: White
ODOR: Faint odor
BOILING POINT / RANGE: > 148.8 deg C (> 300 deg F)
SOLUBILITY:
Water: Not determined

See Section 5 for flammability/explosivity information.

SECTION 10. STABILITY AND REACTIVITY

STABILITY/ REACTIVITY:
Stable under normal conditions.

INCOMPATIBLE MATERIALS / CONDITIONS TO AVOID:
Moisture. Heat.

HAZARDOUS DECOMPOSITION PRODUCTS / REACTIONS:
Carbon monoxide (CO). Nitrogen oxides (NOx). Halogenated compounds. Phosphorus oxides.

SECTION 11. TOXICOLOGICAL INFORMATION

The information presented below pertains to the following individual ingredients, and not to the mixture(s).

ACUTE TOXICITY DATA

INHALATION:
Deltamethrin: Inhalation LC50 (2hr): 785 mg/m^3 [0.785 mg/L] (rat)

Titanium Dioxide: Inhalation LD50 (4hr): 6820 mg/m^3

SKIN:
Deltamethrin: Dermal LD50: > 800 mg/kg (rat); > 2000 mg/kg (rabbit)
Deltamethrin was not irritating to the skin of rabbits.

EYE:
Deltamethrin was slightly to moderately irritating to the eyes of rabbits.

ORAL:
Deltamethrin: Oral LD50: 67-139 mg/kg (rat); 19-34 mg/kg (mouse)

Titanium Dioxide: Oral LD50: >24000 mg/kg (rat)

Triphenyl Phosphate: Oral LD50: 3500 mg/kg (rat)

DERMAL AND RESPIRATORY SENSITIZATION:
Deltamethrin was not a skin sensitizer in guinea pigs.

REPEAT DOSE TOXICITY DATA

SUBCHRONIC / CHRONIC TOXICITY:
In a 13-week neurotoxicity study male and female rats received deltamethrin in the diet at dose levels up to 58 mg/kg/day. Systemic toxicity, including mortality, unsteady gait, hypersensitivity to noise, and impaired performance in neurotoxicity assays were observed in the high dose (58 mg/kg/day). The high dose females exhibited a slight increase in the incidence of retinal degeneration [NOEL: 15 mg/kg/day]. No toxicity was observed when deltamethrin, dissolved in maize oil, was administered in the diet to 64 dogs for 24 months at dose levels of 0.025, 0.25 and 1 mg/kg body weight. Rats and dogs given oral doses of 10 mg/kg/day for 13-weeks exhibited motor symptoms but no pathological changes or fatalities were observed. Other effects observed in dogs were vomiting, diarrhea, tremors, salivation and depressed reflexes.

REPRODUCTIVE / DEVELOPMENTAL TOXICITY:
Deltamethrin was administered to mice and rats by gastric intubation at dose levels 3, 6, or 12 mg/kg body weight (gestation days 7-10) and 1.25, 2.5, or 5.0 mg/kg body weight (gestation days 7-20), respectively. In both species, dose-related reductions in maternal weight gain was observed. There were no dose-related mortalities; however, mice at the high and mid dose groups became convulsive after dosing. In both species, there were no effects on the number of implants, fetal mortality, fetal weight or malformations. In a teratology study, deltamethrin was not teratogenic when given by oral intubation to mice and rats (0.1, 1, or 10 mg/kg/day) from gestation days 6 to 17 and 6 to 18, respectively. In mice, a moderate and transient retardation of development of the fetus at the 1 and 10 mg/kg/day dose was noted, but these effects were not observed on days 1 or 21 post-partum. Slightly delayed ossification at the highest dose level was the only effect noted in rats. In a 3-generation reproductive study conducted in rats (0.1, 1.0 and 2.5 mg/kg/day), a reproductive NOEL of greater than 2.5 mg/kg/day was reported.

MUTAGENICITY / GENOTOXICITY:
Deltamethrin was negative in an Ames assay, chromosome aberration assay, mouse micronucleus test and in a dominant lethal test.

CARCINOGENICITY:
There was no evidence of carcinogenicity in mice or rats treated with deltamethrin at dose levels up to 395 mg/kg body weight or 47 mg/kg body weight, respectively.

Titanium dioxide was tested for carcinogenicity by oral administration, inhalation, intratracheal, subcutaneous injection, and intraperitoneal administration, in several species of animals. Oral, intratracheal, subcutaneous, and intraperitoneal administration did not produce a significant increase in the frequency of any type of tumor in any species. Increased incidences of lung adenomas in rats of both sexes and of cystic keratinizing lesions diagnosed as squamous-cell carcinomas in female rats were observed in animals that had inhaled the high but not the low doses of titanium dioxide.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA

INGREDIENT ECOTOXICITY

Deltamethrin: 96-hr LC50 (rainbow trout): 0.91 ug/L
Deltamethrin: 96-hr LC50 (carp): 1.45 ug/L

Triphenyl Phosphate: 96-hr LC50 (Oncorhynchus mykiss): 300 ug/L
Triphenyl Phosphate: 48-hr EC50 (Daphnia Magna): 10000 ug/L
Triphenyl Phosphate: 28-hr Nitrogen Fixation (Algae: Anabaena Flosaquae): 100 ug/L

ENVIRONMENTAL DATA

PRODUCT / CHEMICAL NAME:

Scalibor: 48-hr EC50 (Daphnia Magna): 13 mg/L
Scalibor: 96-hr LC50 (Fathead Minnow): >100 mg/L

Environmental Data Comments: M-Factor = 10,000

OTHER INGREDIENT ENVIRONMENTAL DATA:

In a activated sludge biodegredation test, deltamethrin was evaluated after 3, 6 and 9 hours. Deltamethrin was 51.4% degraded after 3 hours, 59.8% degraded after 6 hours and 63.4% degraded after 9 hours. Deltamethin is expected to be biodegradable.

SECTION 13. DISPOSAL CONSIDERATIONS

MATERIAL WASTE:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations. Incineration is the preferred method of disposal, when appropriate. Operations that involve the crushing or shredding of waste materials or returned goods must be handled to meet the recommended exposure limit(s).

PACKAGING AND CONTAINERS:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations.

SPECIAL ENVIRONMENTAL HANDLING PROCEDURES:
This material is harmful to the environment. Do not allow product to reach ground water, water courses, sewage or drainage systems.

SECTION 14. TRANSPORT INFORMATION

Refer to site-specific procedures and requirements for additional guidance.

DOT CLASSIFICATION:

Shipment by ground under DOT is non-regulated, however, it may be shipped per the hazard classification below to facilitate multi-modal transport involving ICAO (IATA) or IMO.

IATA/ICAO CLASSIFICATION:

Proper Shipping Name:	Environmentally hazardous substance, solid, n.o.s. (Deltamethrin)
Hazard Class:	9
UN Number:	UN 3077
Packing Group:	III

ADR CLASSIFICATION:

Marine Pollutant/Environmentally Hazardous

Proper Shipping Name:	Environmentally hazardous substance, solid, n.o.s. (Deltamethrin)
Hazard Class:	9
UN Number:	UN 3077
Packing Group:	III
Classification Code:	M7

IMDG/IMO CLASSIFICATION:

Marine Pollutant/Environmentally Hazardous

Proper Shipping Name:	Environmentally hazardous substance, solid, n.o.s. (Deltamethrin)
Hazard Class:	9
UN Number:	UN 3077
Packing Group:	III

SECTION 15. REGULATORY INFORMATION

TSCA LISTING

INGREDIENT	TSCA
Triphenyl Phosphate	X
Titanium Dioxide	X

Substances not included in the table above are TSCA exempt or not regulated under TSCA.

U.S. STATE REGULATIONS

INGREDIENT	California Proposition 65	CARTK	NJRTK	CTRTK	MARTK
Triphenyl Phosphate		X	1951		X
Titanium Dioxide			1861		X

INGREDIENT	PARTK	MNRTK	MIRTK	RIRTK
Triphenyl Phosphate	X	X		X
Titanium Dioxide	X	X		X

Fields in the above tables that do not contain data indicate that those materials have not been listed by local regulations.

X: Listed on applicable state hazardous substance or right-to-know lists.

SECTION 16. OTHER INFORMATION

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequence of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

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